(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(54) Title: RAKE RECEIVER WITH MULTI-PATH INTERFERENCE ACCOMMODATION

$$\hat{\tau}_l \text{ (a)} \qquad \hat{c}_l \text{ (b)} \qquad R_{ff}(\tau_l - \hat{\tau}_0) \text{ (c)} \qquad R_{ff}^{-1}(\tau_k - \hat{\tau}_0) \text{ (d)} \qquad A_{ss}^{H}(\hat{\tau}_k) \text{ (e)} \qquad \bar{n}(\tau) \text{ (f)}$$
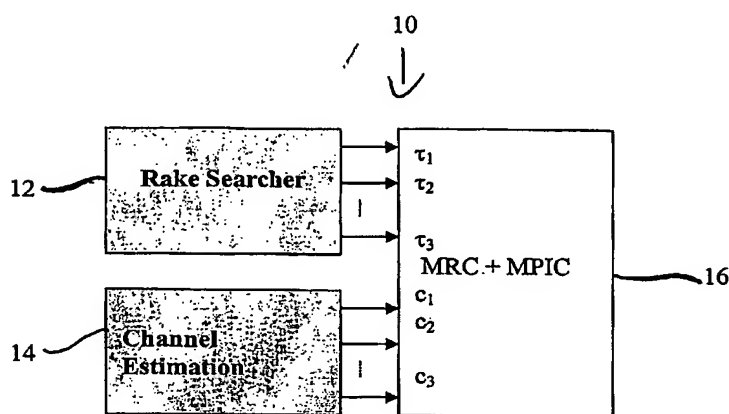
$$\psi(\tau) R_{ff}^{-1}(\tau_k - \hat{\tau}_0) A_{ss}^{H}(\hat{\tau}_k) = \sum_{l=0}^{N_{p}-1} c_l(\tau_l) x(\tau_l) A_{ss}(\tau_l) R_{ff}(\tau_l - \hat{\tau}_0) R_{ff}^{-1}(\tau_k - \hat{\tau}_0) A_{ss}^{H}(\hat{\tau}_k) + \bar{n}(\tau) \qquad \text{(I)}$$

(57) Abstract: A method of extracting data from a received signal including multi-path interference in a rake receiver. The method includes sampling and filtering the received signal; estimating a time delay (a) between paths for the filtered samples $\psi(\tau)$; and estimating channel complex coefficient (b) for the filtered samples $\psi(\tau)$. Transmitted data $x(\tau_1)$ is extracted from the filtered samples $\psi(\tau)$ for each path l by solutions of simultaneous equations of the following filtered samples $\psi(\tau)$ equation (Formula I) wherein k is a particular path, N_p is the number of visible paths, (c) is a a double convolution matrix of the filtering process and (d) is the pseudo inverse, $A_{ss}(\tau_l)$ is the product of spreading and scrambling matrices and (e) is the inverse, and (f) is noise.